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(19) (CA) APPLICATION FOR CANADIAN PATENT (12)

(54) Hockey Stick

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(71) Same as inventor

(57) 21 Claims

Notice: This application is as filed and may therefore contain an incomplete specification.



**ABSTRACT**

A hockey stick assembly comprising an elongate handle having a first insertable portion at one end thereof, a blade having a second insertable portion at one end thereof and an elongate connection sleeve having a first hollow end. The first hollow end is adapted to receive the first insertable portion and form a close fit therewith and a second hollow end is adapted to receive the second insertable portion and form a close fit therewith. A securing means comprising a heat sensitive glue is employed to secure the first and second insertable portions with the first and second hollow ends. The heat sensitive glue facilitates replacement of either the handle and/or stick by reheating.

## BACKGROUND OF THE INVENTION

### FIELD OF THE INVENTION

The present invention relates to hockey sticks. More specifically,  
5 the present invention relates to an improved hockey stick having a replaceable blade.

### DESCRIPTION OF THE PRIOR ART

Hockey sticks are well known. Conventional hockey sticks usually  
10 comprise a one piece stick and blade construction formed from wood and wrapped with a reinforcing layer of fibreglass. This type of hockey stick is offered across a broad price range, from economical to relatively expensive. Unfortunately, wooden sticks generally have a short lifespan and are prone to breaking.

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Two of the most common failures of wooden sticks is the blade and fibreglass wearing down with use and breaking from impact. This results in a fragile blade which often snaps, splinters or becomes too thin to use. Another common failure of the wooden stick is that the handle breaks. The  
20 breakage frequently occurs at the transition from the handle to the blade portion. When playing ice hockey, the only solution is to replace the broken stick with a completely new hockey stick which, when considering the frequency with which breakage can occur, is a costly solution.

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When playing street hockey, a plastic replacement blade can be purchased to replace the blade of a stick which breaks or becomes unusable. The replacement blade is generally provided with an integral collar that slips over the end of the handle. Unfortunately, this means of repairing broken hockey sticks suffers from several disadvantages. One disadvantage is that the  
30 plastic replacement blades do not provide the same "feel", and consequently do

not play as well, as sticks having wooden blades. Another disadvantage is that these replacement blades look cheap, indicating low quality or poorly repaired equipment. Yet another disadvantage, important from a marketing perspective, is that these plastic replacement blades look like replacement blades. When  
5 considering the market segment to which these blades are directed, image and the perception of performance are important considerations.

In recent years, hockey stick manufacturers introduced a one piece hockey stick formed from anodized aluminum. Aluminum hockey sticks have  
10 a high quality, "hi-tech" appeal which is advantageous from a marketing perspective. Until recently, these sticks were afforded great commercial success, being endorsed and advertised by the likes of Wayne Gretzky. However, this type of stick offers the disadvantage of being light weight which is an unattractive feature for many avid hockey players. Further to this end,  
15 it is now believed that aluminum hockey sticks are a potential health hazard to people who regularly use them. Specifically, it has been determined that the use of hollow tube aluminum handles offers a free path for vibration to travel when impacted upon a hockey puck and/or ice. Quite simply, aluminum does not provide the vibration dampening properties that wood affords. These  
20 vibrations are transmitted through the length of the hockey stick to the players hands and arms. When considering the force applied to a common slap-shot and the frequency with which these impacts and subsequent vibrations occur it is not difficult to contemplate the possible health risks which lead directly to many hand, arm, shoulder and back sport-related injuries. For younger  
25 children playing street hockey, the risk of injury is intensified when using aluminum hockey sticks. Hockey gloves which are standard equipment for ice hockey are not usually worn for street hockey. Consequently the gloves which absorb a portion of the vibration and shock incurred with aluminum hockey sticks are not present thereby enhancing the health risk. Recently, it has also

been found that the shafts of the aluminum hockey sticks are capable of shattering when subjected to high impact forces.

5 This health concern has been realized by several minor league hockey organizations such as the Quebec Hockey League and the Western Hockey League who have recently implemented an across-the-board ban on the use of aluminum hockey sticks.

10 Aluminum sticks have the further disadvantage in that, compared to wooden sticks, they are very expensive, often in and around the one hundred dollar range. When considering the popularity of the sport and the number of children involved in minor league hockey associations, it is important to consider the cost involved for parents required to outfit their children for the game of hockey. As aluminum sticks are marketed towards the upper end of  
15 the category, children usually want the "best" or most popular models, often at great costs to the parents. It is also important to consider the frequency with which these sticks must be replaced as, similar to wooden sticks, aluminum sticks are prone to breaking and/or bending of the handles.

20 Accordingly, there has been a long standing need in the sporting industry to provide a hockey stick which permits the replacement of blades and handles at a cost advantage to the consumer and which presents the appearance of a high quality one piece construction with the additional benefit of possessing vibration absorbing characteristics.

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#### SUMMARY OF THE INVENTION

It is an object of the present invention to provide a novel, improved hockey stick which obviates or mitigates at least one of the disadvantages of the prior art hockey sticks.

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According to one aspect of the present invention, there is provided a hockey stick assembly comprising: a handle; a blade; and a connector means to receive said handle and said blade to form said hockey stick, said connector means allowing removal of said blade and said handle when desired.

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According to another aspect of the present invention there is provided a hockey stick assembly comprising an elongate handle having a first insertable portion at one end thereof; a blade having a second insertable portion at one end thereof; and an elongate connection sleeve having a first hollow end adapted to receive the first insertable portion and form a secure fit therewith, and a second hollow end adapted to receive the second insertable portion and form a secure fit therewith.

Preferably, the present invention comprises a hockey stick assembly which further comprising an additional means to secure at least one of the first and second insertable portions within the respective hollow end of the elongate connection sleeve.

A hockey stick assembly in accordance with one embodiment of the present invention provides a stick which permits the replacement of not only the blade if it becomes worn or broken, but also of the handle, should it too become damaged. The connection sleeve in the present invention may be formed from aluminum which is relatively inexpensive, durable and provides a desirable uniform and "hi-tech" look to the stick. The use of the connection sleeve permits a wooden handle to be joined to a wooden blade, thereby producing a stick with the beneficial vibration absorbing characteristics and "feel" of a wooden stick, together with the convenience and cost-effectiveness of replaceable blades and handles.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Presently preferred embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

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Figure 1 shows a perspective view of an assembled hockey stick in accordance with an embodiment of the present invention;

Figure 2 shows a perspective view of a disassembled hockey stick  
10 in accordance with an embodiment of the present invention;

Figure 3 shows an exploded perspective view of the hockey stick of Figure 2;

Figure 4 shows a transverse cross-section through of a portion of  
15 the hockey stick of Figure 2 along dashed line AA-AA;

Figure 5 shows an exploded detail perspective of a connection  
between a blade, a connection sleeve and a handle in accordance with another  
20 alternative embodiment of the present invention; and

Figure 6 shows a longitudinal cross-section through the connection sleeve of Figure 3 along dashed line BB-BB.

25 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

A hockey stick in accordance with an embodiment of the present invention is indicated generally at 10 in Figures 1 and 2. Stick 10 generally comprises a handle 15, connection sleeve 20 and blade 25. Figure 1 shows stick 10 in an assembled state, i.e. in a form suitable for use. Connection

sleeve 20 acts as a means to join blade 25 to handle 15, as shown in Figure 2.

As shown in Figures 3 and 4, connection sleeve 20 comprises a hollow tube having a substantially rectangular transverse cross-section. The external  
5 transverse cross-sectional dimensions, B, of connection sleeve 20 are substantially equivalent to the external transverse cross-sectional dimensions of handle 15 and blade 25.

Handle 15 and blade 25 each have an insertion portion thereon, 30 and  
10 35 respectively. The external transverse cross-sectional dimensions of the insertion portions 30 and 35 are slightly less than the transverse cross-sectional internal dimensions, A, of first and second hollow ends 40 and 45 of connection sleeve 20 thereby allowing for a close fit between components.

15 To assemble the stick, insertion portion 30 of handle 15 is inserted into first hollow end 40 of connection sleeve 20 and forms a close fit therewith, and insertion portion 35 of blade 25 is inserted into second hollow end 45 of connection sleeve 20 and forms a close fit therewith.

20 Although it is envisioned that insertable portions 30 and 35 will form close fits with the internal surfaces of hollow ends 40 and 45 of connection sleeve 20, it is preferred that a means to secure insertable portions 30 and 35 within respective hollow ends 40 and 45 be utilized. The means to secure may be, for example, adhesive, screws, bolts or rivets which passes through an  
25 aperture (not shown) made in connection sleeve 20 and penetrates the insertable portion of handle 15 or blade 25. Preferably, the present inventors contemplate that a heat sensitive glue be used to secure insertable portions 30,35 with sleeve 20. One advantage with using the heat sensitive glue is that stick 15 and/or blade 25 may be removed from sleeve 20 by reheating, thereby facilitating  
30 replacing components. The means for securing is not limited to the foregoing



examples, as other means are available, as would be apparent to a person skilled in the art.

5       The transverse cross-sectional shape of connection sleeve 20 is not limited to the rectangular shape described above, as long as insertable portions 30 and 35 have shapes which correspond to the shape of the internal bore of connection sleeve 20. In an alternative embodiment, shown in Figure 5, insertable portion 35' of blade 25 has a triangular transverse cross-section which forms a complementary fit with the triangular internal transverse cross-section of end 45' of connection sleeve 20'. In the embodiment shown in Figure 5, end 40 of connection sleeve 20' has a rectangular transverse cross-section corresponding to the rectangular transverse cross-section of insertable end 30.

15       As is apparent from the two embodiments exemplified herein, insertable portions 30 and 35 may have the same or different transverse cross-sectional shapes and dimensions.

20       As would be apparent to a person skilled in the art, many other geometric and non-geometric shapes for the insertable portions 30 and 35 and the internal surface of connection sleeve 20 are possible. A circular transverse cross-section may be used, however, a very tight fit and/or the use of the heat sensitive glue securing means, as described above, would be particularly advantageous.

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30       As would be apparent to a person skilled in the art, the material from which connection sleeve 20 is formed is not particularly limited. Preferably, the connection sleeve should be rigid, durable, light-weight and inexpensive to produce. Preferably, the connection sleeve is formed from a material selected from the group comprising aluminum, stainless steel, metal alloys, plastic,

nylon, fibreglass, and carbon fibre. Aluminum is particularly advantageous as it provides adequate rigidity, durability, it is visually appealing and a readily available material.

5           It is envisioned by the inventors that the connection sleeve need not be completely hollow. As shown in Figure 6, connection sleeve 20 may comprise an internal separator wall 50 which separates first hollow end 40 from second hollow end 45. A connection sleeve of such construction would be suitable if the connection sleeve were formed by casting, for example.

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Although embodiments of the present invention have been described by reference to an ice-hockey style stick, it is contemplated by the inventors that the hockey stick assembly described herein is suitable for ice-, street-, roller- or field-hockey sticks.

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The present invention has been described with reference to presently preferred embodiments. Other variations and embodiments of the present invention may be apparent to those of ordinary skill in the art. Accordingly, the scope of protection sought for the present invention is only

20   limited as set out in the attached claims.

What is claimed is:

1. A hockey stick assembly comprising:
  - a handle;
  - a blade; and
  - a connector means to receive said handle and said blade to form said hockey stick and secured by a securing means, said connector means and said securing means allowing removal of said blade and said handle when desired.
2. The hockey stick assembly according to claim 1, wherein the means to secure is selected from the group comprising adhesive, screws, bolts and rivets.
3. The hockey stick assembly according to claim 3, wherein the means to secure is a heat sensitive adhesive.
4. The hockey stick assembly according to claim 1, wherein the elongate handle section is formed from wood.
5. The hockey stick assembly according to claim 1, wherein the blade section is substantially formed from wood.
6. The hockey stick assembly according to claim 1, wherein the elongate connection sleeve is formed from a material selected from the group comprising aluminum, stainless steel, metal alloy, plastic, nylon, fibreglass and carbon fibre.
7. The hockey stick assembly according to claim 6, wherein the elongate connection sleeve is formed from aluminum.

8. The hockey stick assembly according to claim 7, wherein the elongate connection sleeve further comprises an internal separator wall between a first hollow end and a second hollow end.
9. The hockey stick assembly according to claim 1, wherein the elongate connection sleeve has external transverse cross-sectional dimensions substantially equivalent to external transverse cross-sectional dimensions of the elongate handle.
10. A hockey stick assembly comprising:
  - an elongate handle having a first insertable portion at one end thereof;
  - a blade having a second insertable portion at one end thereof; and
  - an elongate connection sleeve having a first hollow end adapted to receive the first insertable portion and form a close fit therewith, and a second hollow end adapted to receive the second insertable portion and form a close fit therewith; and,
  - a securing means to secure said first and second insertable portions with said first and second hollow ends.
11. The hockey stick assembly according to claim 10, wherein the means to secure is selected from the group comprising adhesive, screws, bolts and rivets.
12. The hockey stick assembly according to claim 11, wherein the means to secure is a heat sensitive adhesive.
13. The hockey stick assembly according to claim 10, wherein the elongate handle section is formed from wood.

14. The hockey stick assembly according to claim 10, wherein the blade section is substantially formed from wood.

15. The hockey stick assembly according to claim 10, wherein the elongate connection sleeve is formed from a material selected from the group comprising aluminum, stainless steel, metal alloy, plastic, nylon, fibreglass and carbon fibre.

16. The hockey stick assembly according to claim 15, wherein the elongate connection sleeve is formed from aluminum.

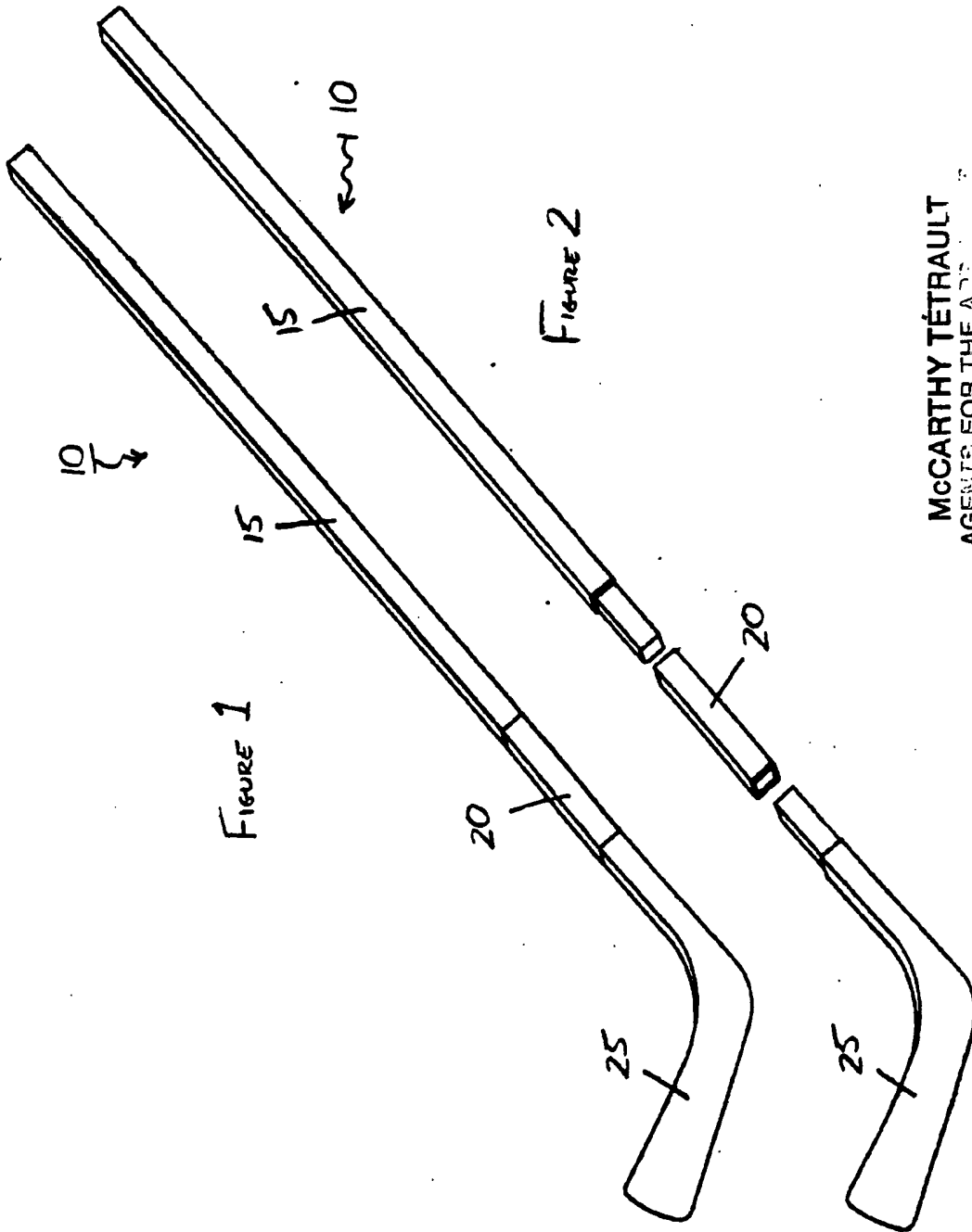
17. The hockey stick assembly according to claim 16, wherein the elongate connection sleeve further comprises an internal separator wall between the first hollow end and the second hollow end.

18. The hockey stick assembly according to claim 10, wherein the elongate connection sleeve has external transverse cross-sectional dimensions substantially equivalent to external transverse cross-sectional dimensions of the elongate handle.

19. The hockey stick assembly according to claim 10, wherein each of the first and second insertable portions have a geometrical transverse cross-sectional shape.

20. The hockey stick assembly according to claim 10, wherein each the first and second insertable portions have an identical geometrical transverse cross-sectional shape.

21. The hockey stick assembly according to claim 10, wherein the transverse cross-sectional shape of the first and second insertable portions is rectangular.



McCARTHY TÉTRAULT  
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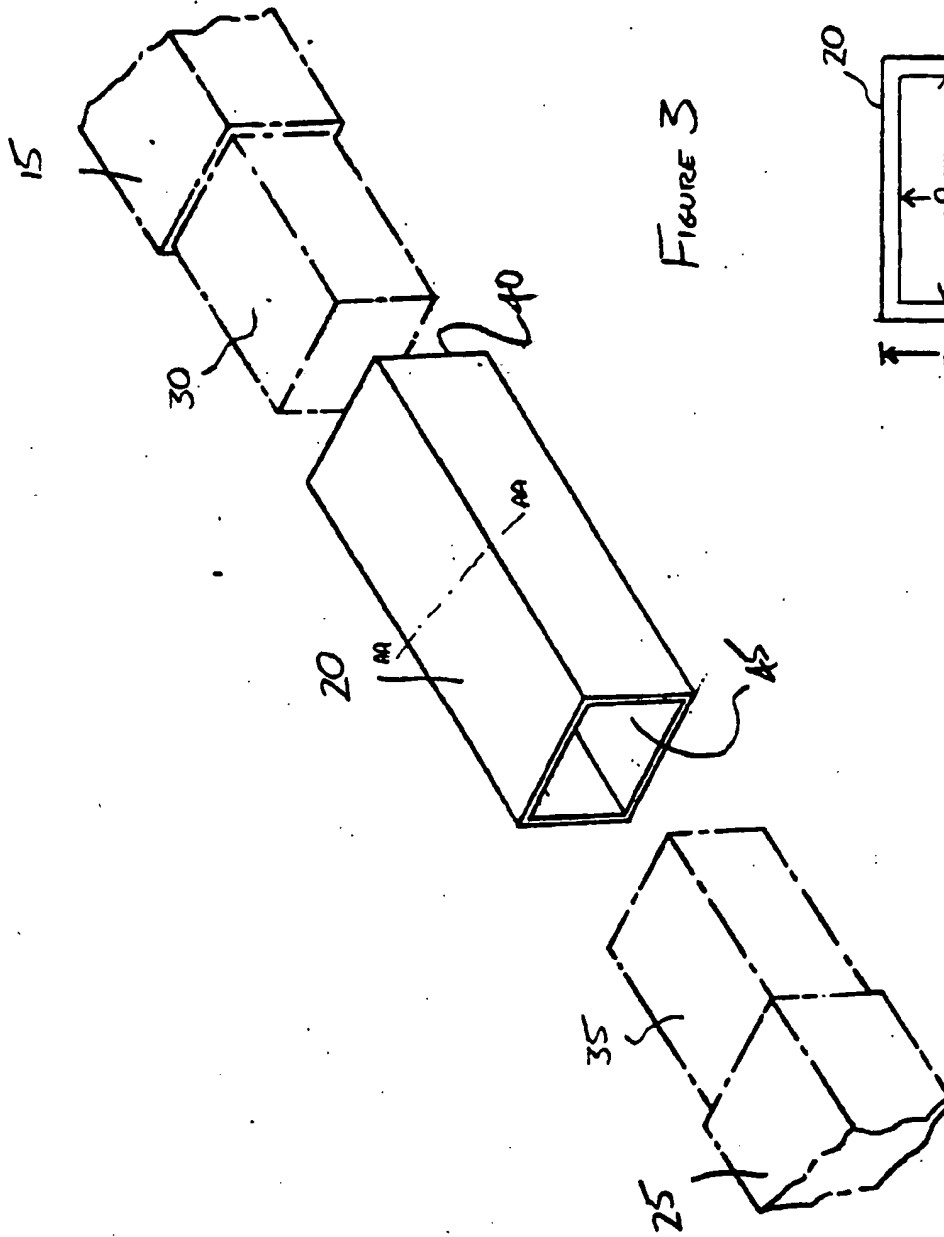
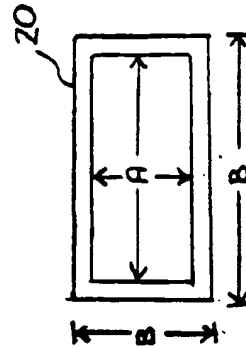


FIGURE 3



McCarthy Tétrault  
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FIGURE 4

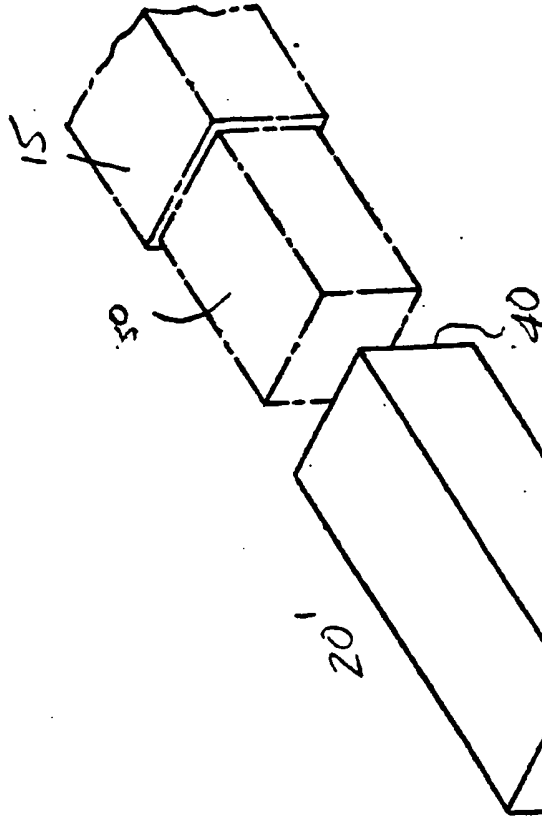


FIGURE 5

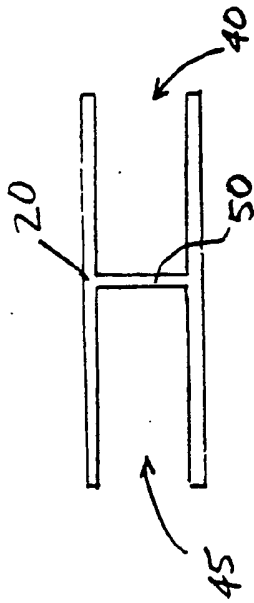
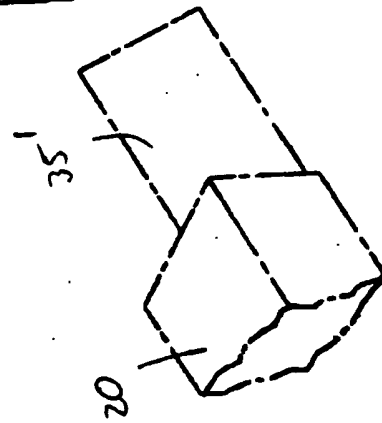
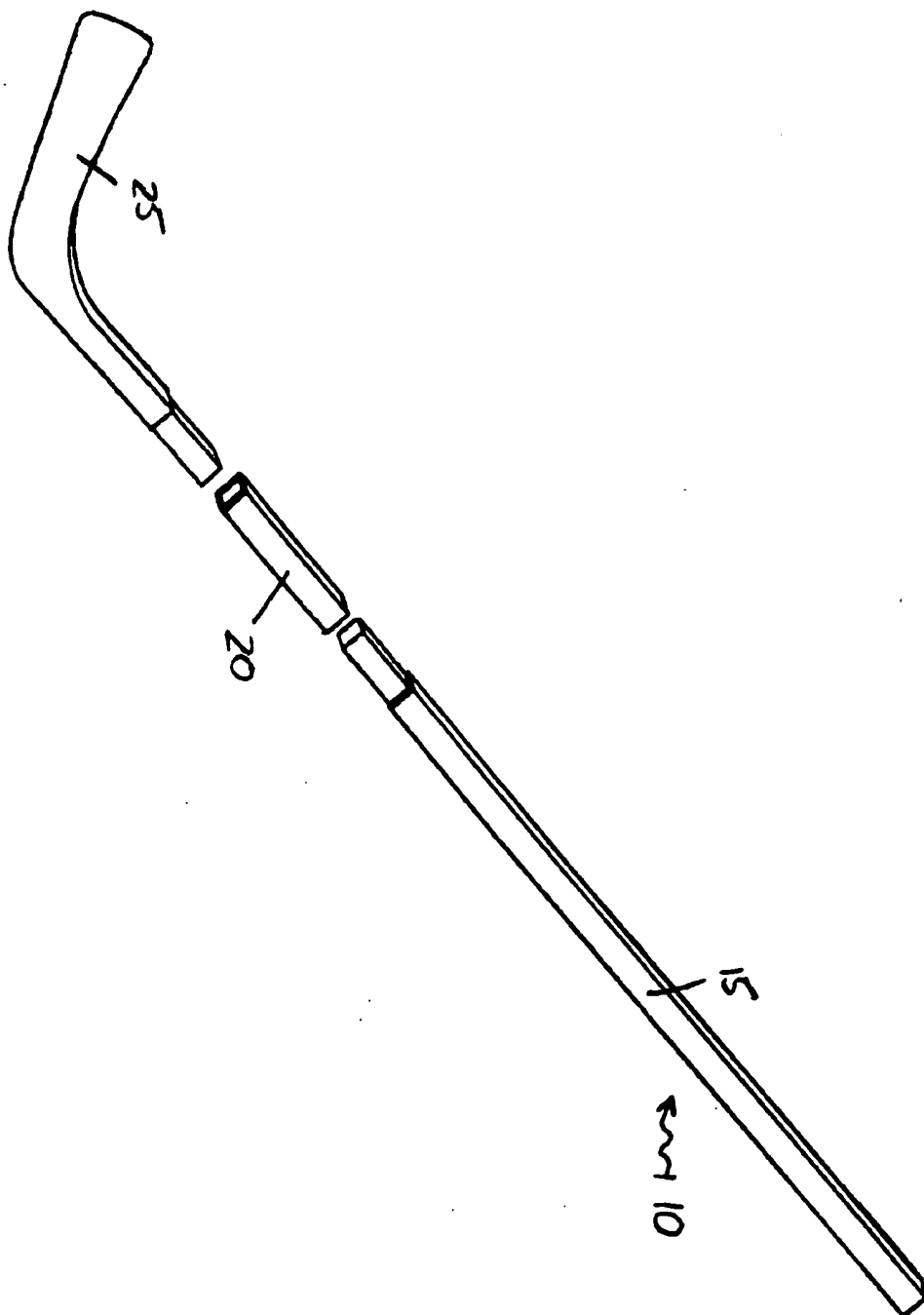


FIGURE 6



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